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CASE REPORT

Complacency about tetanus: Development of tetanus after finger tip injury despite anti-tetanus treatment

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Case report

A 75-year-old farmer sustained a 2 cm wound on his left index finger following a crush injury in the farmyard. He was initially treated in a local district general hospital with simple cleansing and direct suture, and a single tetanus toxoid injection (diTeBooster, Statens Serum Institut, 0.5 ml intramuscular). 11 days later, the patient presented to the same emergency department with trismus and worsening purulent wound infection, and was diagnosed with wound infection and temporo-mandibular joint arthritis. He received further wound cleansing and oral antibiotics and was discharged.

The patient continued to deteriorate and was reviewed again at the emergency department 13 days post injury, where it was immediately apparent that he was suffering from acute tetanus, with neck stiffness, trismus, generalized muscular spasm and hyperexcitability to touch and noise. He was transferred to a regional intensive care unit for airway support, where referral was made to the plastic surgery team for assessment and treatment of the wound (Fig. 1), which was dehisced and inflamed. Bacteriology of wound swabs at this stage confirmed significant growths of *Clostridium tetani* and *Staphylococcus aureus*.

The patient was treated aggressively with 150 units/kg of human tetanus immunoglobulin and high doses of intravenous metronidazole, benzylpenicillin and flucloxacillin. Additionally, he was given intravenous diazepam and magnesium sulphate. The wound was treated with thorough wound debridement and washout and allowed to heal by secondary intention. The patient's state fluctuated over the next 11 days in Intensive Care and High Dependency Units requiring airway support. During this time, extraction of one prominent upper incisor tooth was carried out to prevent further erosion of the lower alveolus secondary to tetanic contractions. The patient eventually stabilized sufficiently to allow transfer to the ward, where treatment consisted of antibiotics, wound care and nutritional support. The patient recovered fully and was discharged 25 days later after admission (38 days post-injury) with a scheduled full tetanus immunization program.

Discussion

Although tetanus is now rare, it is preventable by undertaking appropriate wound care and tetanus prophylaxis. This case report highlights some important issues in relation to the management of tetanus. A vaccination history is vital to ascertain the vulnerability of the patient. A booster dose of tetanus toxoid administered to patients without previous vaccination does not provide full protection against tetanus.

The most important step in diagnosis is the recognition of relevant risk factors and maintenance of a high suspicion for the disease. Tetanus is mainly a disease of older people[3,4] and is associated with soil-contaminated wounds and farmyard injuries. In this case, although tetanus was initially recognized as a possible complication, the prophylaxis given was

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Figure 1 Wound on the patient's left index finger.

only equivalent to that administered to individuals who are already fully immunized. This patient was not. Consequently, the prophylaxis was inadequate and the patient developed life-threatening acute tetanus.

Tetanus is caused by *Clostridium tetani*, which is an obligate anaerobic, Gram-positive bacillus that is motile and readily forms endospores. Proper and thorough wound debridement is critical to prevent tetanus as an incompletely-debrided wound with necrotic tissue present provides an anaerobic environment which ideally facilitates the proliferation of *Clostridium tetani*.

The provision of universal tetanus immunization and prophylaxis has resulted in a marked decrease in cases of acute tetanus. However, this current state may lead to complacency on the part of clinicians dealing with trauma patient and a failure to recognize development of potentially lethal complications.[1] This complacency is further threatened by recent reductions in the uptake of primary childhood immunization.[2] Acute tetanus is rarely encountered, but clinician should continue to suspect it as a possible complications in certain vulnerable individual, particularly in the light of incomplete provision of immunization among the general population. This case highlights the danger of taking for granted such immunization programs and the consequences that can occur as a result.

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